TMDL Discussion for EPA Region VII

Intent of the TMDL

All three nitrate TMDLs identify nonpoint sources as the cause of the nitrate impairments and specifically state that point sources do not contribute substantially to the nitrate impairments at the drinking water intakes. Point sources make up approximately 10% of the load to the receiving streams. The Raccoon River TMDL suggests that nitrate from most point sources is assimilated in the river long before it reaches the point of impairment. However, point sources are capped at their existing discharge to prevent them from contributing additional nitrate to the receiving streams.

The impairments are for drinking water (surface) intakes. When water at the intakes exceeds 10 mg/L nitrate, the drinking water MCL is also exceeded which makes the water unusable for consumption without nitrate removal or blending with groundwater. The TMDL is required to implement a mass limit even though the impairment is expressed in mg/L. Thus, point sources are given a "total maximum daily load" of nitrate expressed as a mass limit. Ironically, the mass limit assigned to the point source does not provide any real protection against the impairment. Each of the TMDLs assumes that the impairments are protected from point sources either by instream assimilation or simply by being an insignificant source of nitrate to the receiving stream. In essence, the nitrate limits given to point sources provide no real protection of the impairment, the fact that they are "point sources" provides that protection.

Determination of Limits

The wasteload allocations in the TMDL come from a variety of calculations and assumptions:

The Cedar River TMDL used 4 methods (Type 1-4) to calculate the total nitrogen effluent from an existing NPDES permitted facility.

Type 1 – 0.027 lbs/day TKN x 2000 census population
Type 2 – Per Capita TKN + 30-day average industrial ammonia mass
Type 3 – CDLs used Per Capita TKN and days of discharge
Type 4 – Effluent monitoring

The Des Moines River and Raccoon River TMDLs used 3 methods (Type 1-3) to calculate total nitrogen effluent from an existing NPDES permitted facility.

Type 1 – Design influent TKN from construction permit
Type 2 – 0.027 lbs/day TKN x 2000 census population
Type 3 – Per Capita TKN + 30-day average industrial ammonia mass

The Department recognizes two unique factors when issuing limits to point sources in these TMDL watersheds. One, point sources are not a significant source of the impairment and two, the TMDL assigns a single daily mass limit to the point source. The CWA compels the permit writer to express limits in an NPDES permit as an average monthly limit (AML) *and* maximum daily limit (MDL). While the term "wasteload allocation" is used in the TMDL documentation, the number that is developed in the TMDL functions more like a long term average (LTA) than a wasteload allocation. LTA multipliers are applied to the LTA to develop AMLs and MDLs. The Department received guidance from EPA Region 7 when developing AMLs and MDLs for point sources. The method used was suggested by EPA Region 7 and has been affirmed by EPA Headquarters staff.

Implications of Applying the TMDL "WLA" Directly in NPDES Permit

Some have questioned the Department's implementation of the nitrate TMDL in NPDES permits, specifically why have we chosen to express AMLs and MDLs in the permit that appear to allow more nitrate discharge to the rivers than the TMDL WLA. As discussed above, the methods and assumptions used to develop the point source WLAs vary greatly. The Department has no confidence in the accuracy of the numbers. In the cases where actual data was used, the TMDLs state that only 2 – 5 samples were used and "more extensive sampling will be necessary to increase the accuracy of the estimates". In the case of the City of Clear Lake, the effluent data used in the TMDL gives the City a very small allocation. There is no confidence that the City can meet the WLA limit if it were applied directly. The City of Allison was given a WLA of 5.5 tons/year whereas the City of Clear Lake was given 1.5 tons per year. The City of Allison is given over 3 ½ times the allocation that the City of Clear Lake is given even though Clear Lake's population is 7 ½ times greater than Allison's. It is illogical that a city of 1,000 people gets a limit 3 ½ times greater than a city of 7,700.

It is important to understand two very significant issues:

1) Point sources are not expected to reduce current loadings.
2) If a point source receives a limit they cannot meet, they will be expected to meet that limit by upgrading the WWTP.

These two concepts are in direct conflict. The Department would be negligent to implement a limit in an NPDES permit that would directly conflict with the clear intent of the TMDL. The inaccuracies are in the TMDL and any corrections need to be applied in the TMDL, not in the NPDES permit.

The Iowa Environmental Council (IEC) has stated that they believe the limits established in NPDES permits for point sources allow more nitrate to be discharged than allowed by the TMDLs. IEC has also specifically stated that they wish to force a point source (municipality) to upgrade to meet a nitrate limit as a means of forcing nonpoint sources to comply with the TMDL. In the event the Department establishes a limit that cannot be

met, there is a very real threat that the point source will be required (via litigation) to upgrade, which is not the intent of the TMDL.

Annual Limits

One of the suggestions has been to implement an annual limit consistent with the wasteload allocation in the TMDL. This would provide a limit that conflicts with the procedure used by the Department to calculate the AMLs and MDLs. Using the cities of Allison and Clear Lake as an example, an annual limit based on the LTA multiplier would give each city an annual limit of 34,492 and 9,088 lbs/yr respectively. Implementing the TMDL wasteload allocation would give them 11,096 and 2,920 lbs/yr respectively. Appling an annual limit based on the TMDL wasteload allocation places the cities in the same jeopardy as implementing the daily TMDL wasteload allocation.

Conclusion

The three nitrate TMDLs in Iowa were developed to address an impairment caused by nonpoint sources. There is a clear expectation that point source are capped at existing discharge levels and not expected to reduce nitrate discharges. The assumptions used to develop the point source "wasteload allocations" are varied and in some instances completely inaccurate. Implementing any limit in an NPDES permit that leads to a point source being required to reduce its current discharge conflicts with the intent of the TMDL and provides no additional protection to the impairment. This would also expose the point source to a potential litigation and an unnecessary required upgrade. An annual limit based on anything other than the LTA multiplier places a facility in a situation where they could exceed the limit and be forced to upgrade.

The concerns raised regarding point source nitrate limits in NPDES permits need to be addressed by revisiting and correcting the TMDLs themselves. The NPDES Section strives to implement limits as intended by the TMDLs but is not the appropriate program to try and correct the TMDLs.